

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Atty. Docket: NL021153US

RONALD DECKER ET AL.

CONFIRMATION No.: 9985

SERIAL NO.: 10/561,532

EXAMINER: MICHAEL B. SHINGLETON

FILED: DECEMBER 19, 2005

ART UNIT: 2815

TITLE: FLEXIBLE DEVICE AND METHOD FOR MANUFACTURING THE SAME

**Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

APPEAL BRIEF

Sir:

Appellants herewith respectfully present its Brief on Appeal as follows:

REAL PARTY IN INTEREST

The real party in interest is Koninklijke Philips Electronics N.V., a corporation of The Netherlands having an office and a place of business at Groenewoudseweg 1, Eindhoven, Netherlands 5621 BA.

RELATED APPEALS AND INTERFERENCES

To the best of Appellants' knowledge and belief, there are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1, 3-7, 9 and 11 are pending in this application. Claims 2, 8, 10, and 12-13 are canceled. All claims are rejected in the Final Office Action that issued March 3, 2011. No Amendment After Final Action was submitted. Claims 1, 3-7, 9 and 11 are the subject of this appeal.

STATUS OF AMENDMENTS

An amendment was submitted on December 14, 2010 in response to an Office Action of September 15, 2010. No Amendment After Final Action was filed in response to the Final Office Action that issued March 3, 2011. This Appeal Brief is in response to the Final Office Action that rejected claims 1, 3-7, 9 and 11.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention, for example as claimed in claim 1, relates to a flexible monolithic electronic device comprising a substrate layer of electrically insulating material having a first side (e.g., see, present application as filed, FIG. 1, designation 1 and page 7, lines 17-24) and an opposed second side (e.g., see, present application as filed, FIG. 1, designation 2 and page 7, lines 17-24), the substrate layer having at least one aperture extending from the first to the second side (e.g., see, present application as filed, FIG. 5 and 6, designation 14 and page 8, line 32 through page 9, line 2); a base layer of semiconductor material (e.g., see, present application as filed, FIGs. 1-6, designation 13 and page 7, lines 17-24) disposed on and in contact with the first side of the substrate layer for forming a first electrode (e.g., see, present application as filed, page 7, line 25 through page 8, line 5); an active layer of semiconductor material disposed on and in contact with the second side of the substrate layer for forming a second electrode (e.g., see, present application as filed, FIGs. 1-6, designation 11 and page 7, lines 17-24), the active layer including at least one switching element (e.g., see, present application as filed, page 7, line 25 through page 8, line 8); and a flexible coating (e.g., see, present application as filed, FIGs. 2-6, designation 3 and page 8, lines 9-17) formed on the first side of the substrate layer for acting as a protective cover for the at least one switching element (e.g., see, present application as filed, FIGs. 2-6, designation 3 and page 8, lines 9-17), wherein the at least one aperture (14) extends from the base layer (13) to the active layer (11) and is filled with conductive

material (e.g., see, present application as filed, FIGs. 5-6 and page 8, line 32 through page 9, line 2).

The present invention, for example as claimed in claim 9, relates to an apparatus comprising: a substrate layer of electrically insulating material having a first side (1) (e.g., see, present application as filed, FIG. 1, designation 1 and page 7, lines 17-24) and an opposed second side (2) (e.g., see, present application as filed, FIG. 1, designation 2 and page 7, lines 17-24), the substrate layer having at least one aperture (14) extending from the first to the second side (e.g., see, present application as filed, FIG. 5 and 6, designation 14 and page 8, line 32 through page 9, line 2); a base layer (13) of semiconductor material (e.g., see, present application as filed, FIGs. 1-6, designation 13 and page 7, lines 17-24) disposed on and in contact with the first side of the substrate layer for forming a first electrode (e.g., see, present application as filed, page 7, line 25 through page 8, line 5); an active layer (11) of semiconductor material disposed on and in contact with the second side of the substrate layer for forming a second electrode (e.g., see, present application as filed, FIGs. 1-6, designation 11 and page 7, lines 17-24), the active layer (11) including at least one switching element (e.g., see, present application as filed, page 7, line 25 through page 8, line 8); and a flexible coating (3) (e.g., see, present application as filed, FIGs. 2-6, designation 3 and page 8, lines 9-17) formed on the first side of the substrate layer for acting as a protective cover for the at least one switching element (e.g., see, present application as filed, FIGs. 2-6, designation 3 and page 8, lines 9-17), wherein the at least

one aperture extends from the base layer to the active layer and is filled with conductive material, and wherein the substrate layer, base layer, active layer and flexible coating are flexible (e.g., see, present application as filed, FIGs. 5-6 and page 8, line 32 through page 9, line 2).

The present invention, for example as claimed in claim 11, relates to a cartridge comprising: a display pixel (e.g., see, present application as filed, claim 11 and page 2, line 26 through page 3, line 17) including: a substrate layer of electrically insulating material having a first side (e.g., see, present application as filed, FIG. 1, designation 1 and page 7, lines 17-24) and an opposed second side (e.g., see, present application as filed, FIG. 1, designation 2 and page 7, lines 17-24), the substrate layer having at least one aperture (14) extending from the first to the second side (e.g., see, present application as filed, FIG. 5 and 6, designation 14 and page 8, line 32 through page 9, line 2); a base layer (13) of semiconductor material (e.g., see, present application as filed, FIGs. 1-6, designation 13 and page 7, lines 17-24) disposed on and in contact with the first side of the substrate layer for forming a first electrode (e.g., see, present application as filed, page 7, line 25 through page 8, line 5); an active layer (11) of semiconductor material disposed on and in contact with the second side of the substrate layer for forming a second electrode (e.g., see, present application as filed, FIGs. 1-6, designation 11 and page 7, lines 17-24), the active layer including at least one switching element (e.g., see, present application as filed, page 7, line 25 through page 8, line 8); and a flexible coating formed (e.g., see, present

application as filed, FIGs. 2-6, designation 3 and page 8, lines 9-17) on the first side of the substrate layer for acting as a protective cover for the at least one switching element (e.g., see, present application as filed, FIGs. 2-6, designation 3 and page 8, lines 9-17), wherein the at least one aperture extends from the base layer to the active layer and is filled with conductive material (e.g., see, present application as filed, FIGs. 5-6 and page 8, line 32 through page 9, line 2), wherein the substrate layer, base layer, active layer and flexible coating are rolled within the cartridge (e.g., see, present application as filed, claim 11 and page 2, line 26 through page 3, line 17).

It should be explicitly noted that it is not the Appellants' intention that the current claims be limited to operation within the illustrative device and method described above beyond what is required by the claim language. Further description of the illustrative device and method is provided above indicating portions of the claims which cover the illustrative device merely for compliance with requirements of this appeal without intending any further interpreted limitations be read into the claims as presented.

The Appellants have made every effort to provide illustrations of where supporting description is contained in the application as filed since one of the outstanding rejections is a "New Matter" rejection. It must be noted that much of the language of the claims as currently presented is also present in the original claims and other portions of the application as filed.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether the drawings are objectionable under 37 CFR 1.83(a).

Whether the amendment filed 6-28-2010 introduces new matter into the disclosure.

Whether claims 1 and 9 of U.S. Patent Application Serial No. 10/561,532 are anticipated by 35 U.S.C. §102(e) over U.S. Patent No. 6,798,679 to Matsumoto ("Matsumoto").

Whether claims 1, 3-7, 9 and 11 of U.S. Patent Application Serial No. 10/561,532 are obvious under 35 U.S.C. §103(a) over U.S. Patent No. 6,724,794 to Dudoff ("Dudoff") in view of U.S. Patent No. 4,729,061 to Brown ("Brown").

ARGUMENT

The drawings are said to be objectionable under 37 CFR 1.83(a).

DRAWINGS OBJECTION

The Examiners asserts the following:

i) the drawings do not show at least one switching element and especially one that has an "electrode" in the active layer as is set forth by at least claim 1. As shown in the original disclosure and original Figures 1-6 the active layer 11 is totally removed in the final product (Figures 5 and 6) and also from the original disclosure and original drawings the active layer 11 is totally removed before any apertures like 14 are formed in the oxidic layer 12. Thus the electrode material formed in the aperture 14 that extends on the side opposite base layer 13 cannot and is not the first electrode.

Applicants strongly deny this assertion and any conclusions that the Examiner draws from it. Nothing, resembling the Examiner's suggestion that layer 11 is removed is suggested in the specification, claims, or in the Figures. The Examiner has not identified where support for this assertion is found. The Applicants point out (also see similar discussion in the Response filed December 15, 2010) that the active layer 11 is prominently and unchangeably displayed in each of Figures 1-4. In Figures 5 and 6 the layer was diminished yet it is clearly visible and identifiable by its distinct shading. Identical shading is carried throughout Figures 1-6 for each of the respective layers. Nowhere within the four corners of the specification, and especially not in the drawings, is there even a hint of the active layer 11 being totally removed. Lines 6-8 at page 8 of the original specification, state the following:

Subsequently, or after various intermediate steps, superfluous regions of the active layer 11 and any layer on top of it are removed by wet-chemical or dry etching so as to obtain at least one island-like structure.

Thus, the specification as originally submitted supports the recitation of "an active layer of semiconductor material disposed on and in contact with the second side of the substrate layer for forming a second electrode", as for example recited in claim 1. It is further noted that in accordance with claim 1 a base layer forms a first electrode. As with regard to "the active layer including at least one switching element", as for example recited in claim 1, support is found at page 7, starting at line 25 of the original specification.

The Examiners further asserts:

ii) The capacitor (claim 5). There is no showing of the capacitor.

The Applicants point out that it is well known to those skilled in the art that capacitors are formed when two conductive plates are separated by an insulator. That is the structure formed by active, insulating, and base layers 11, 12, and 13, which are marked in amended FIG. 6 with numeral 46 (see, June 28, 2010 response). Further discussion is contained in the application as filed for example in the abstract, claims 5 and 6, page 2, lines 14-20, page 4, lines 1-18, page 7, line 27 through page 8, line 1 and page 9, lines 8-13. It is respectfully submitted that since the recitation of the capacitor was present in numerous portions of the application at the time of filing, this cannot be considered new matter.

The Examiners further asserts:

iii) There is still no array of switching elements shown (claim 7).

The Applicants point out that Figure 6 does illustrate an array of switching elements. It is claimed and explained in the specification, "the active layer including at least one switching element", as in claim 1. Figure 6 illustrates three independent iterations of the active layer. Therefore, since each iteration includes at least one, three evenly spaced iterations of the active layer must necessarily include an orderly arrangement (the definition of an array) of switching elements.

Accordingly, the Applicants respectfully request the Board of Patent Appeals to overrule this objection under 37 CFR 1.83(a).

It is said that the amendment filed 6-28-2010 introduces new matter into the disclosure

NEW MATTER OBJECTION

The Examiner has asserted that the drawings and the amendment dated 6-28-2010 introduces new matter. Specifically, the Examiner states that layer 11 is removed and that in the original Figure 6 there is no active layer. As the Applicant argues above, in the Drawings Objection section, the Examiner has no basis to assert that "layer 11 is removed in the final product" and that "In original Figure 6 there is no active layer of semiconductor." The Figures and the specification identify the active layer by numeral 11. The oxidic layer 12 is described as "insulating material" i.e., not being electrically conductive (e.g., see, the application as filed, abstract). The substitute specification present in the June 28, 2010 response provides at page 15, lines 17-22, that apertures 14 are provided in the layer 12

for placement of metal. The metal being used for conductivity between the switching elements of the active layer 11 and the base layer 13 are described, for example, at page 12, line 17 to page 13, line 16,. It is respectfully submitted that the Examiner has failed to explain where support for this position is found nor refuted the Applicant's prior arguments with recitation to paragraph and line number.

Accordingly, the Applicants respectfully request the Board of Patent Appeals to overrule this new matter objection.

Claims 1 and 9 are said to be anticipated by Matsumoto.

Appellants respectfully request the Board to address the patentability of independent claims 1 and 9. While it is alleged that Matsumoto discloses all the subject matter of the claimed invention, this point is disputed by the Appellants.

First, it is pointed out that element 15 referenced by the Examiner at page 5 of the Final Office Action dated March 3, 2011, was removed in the response filed on June 28, 2010. See page 8 of that Response. Further, the presented prior art references have been extensively discussed and distinguished in the Response of June 28, 2010. These references do not teach the elements of the claims. If the Examiner believes otherwise, then the Examiner should explain where, in the argument of June 28, 2010 Reply, the

Applicants err. The Examiner has failed to reject the individual elements of the claims by referencing portions of the prior art with references to page or column, and line number.

As explained in detail in the June 28, 2010 Reply, claim 1 is not anticipated or made obvious by the teachings of Matsumoto, Dudoff, and Brown as explained in detail in the amendment submitted on June 28, 2010, which explanation is omitted herein for sake of clarity but which arguments are incorporated into this amendment as if set out in its entirety and are requested to be reviewed by the Examiner herein.

MATSUMOTO

Matsumoto illustrates a module substrate 2 having bare chips 1 molded into a mold resin 8 and a good function chip 3 sealed in a mold. Figure 3 also shows common electrical wires 20, mounting islands 10 and bonding wires, also see Figure 32 items 104 and 105. Matsumoto does not specify how common electrical wires 20 are formed. To connect the active and functional layers Matsumoto requires

- (a) the bare chips 1 to connect to the bonding wires,
- (b) the bonding wires to connect to the mounting islands,
- (c) the mounting islands to connect to a second set of the bonding wires, and finally
- (d) the second set of the bonding wires to connect to the good function chip 3.

This scheme of Matsumoto fails to teach, disclose, or suggest a simple connection where "the at least one aperture extends from the base layer to the active layer and is filled with conductive material" as recited in claim 1 and as similarly recited in claim 9. Thus, because the aperture extends from the base layer to the active layer, the connection is achieved

without requiring the common electrical wires, mounting islands, and bonding wires of Matsumoto. In claims 1 and 9 the apertures themselves connect the base layer and the active layer. As seen from the Figure presented by the Examiner on page 7 of the Final Office Action, there is no contact between the apertures 20 of Matsumoto and at least its active layer 1.

Based on the foregoing, the Appellants respectfully submit that independent claims 1 and 9 are patentable over Matsumoto and notice to this effect is earnestly solicited.

Claims 1, 3-7, 9 and 11 are said to be obvious over Dudoff in view of Brown.

Appellants respectfully request the Board to address the patentability of independent claims 1, 9 and 11, and further claims 3-7 as depending from independent claim 1, based on the requirements of independent claims 1, 9 and 11. This position is provided for the specific and stated purpose of simplifying the current issues on appeal. However, Appellants herein specifically reserve the right to argue and address the patentability of claims 3-7 at a later date should the separately patentable subject matter of claims 3-7 later become an issue. Accordingly, this limitation of the subject matter presented for appeal herein, specifically limited to discussions of the patentability of independent claims 1, 9 and 11 is not intended as a waiver of Appellants' right to argue the patentability of the further claims and claim elements at that later time.

While it is alleged that Dudoff in view of Brown discloses all the subject matter of the claimed invention, this point is disputed by the Appellants.

DUDOFF AND BROWN

With regard to Dudoff and Brown, the Final Office Action and the previous Office Actions dated September 15, 2010, fail to identify exactly what sections of these references teach recitations, at least of the independent claims. A close examination of these references does not reveal what exactly would have motivated these skilled in the art to combine them.

It is undisputed that Dudoff does not teach, disclose or suggest "an insulating layer with at least one aperture can be and is used to connect two active/functional devices together one on top the other." (See, Final Office Action, page 8.) Brown is cited to provide that which is admitted missing from Dudoff, however, it is respectfully submitted that reliance on Brown is misplaced.

In rejecting the claims, the Examiner states that Brown "shows that an insulating layer with at least one aperture can be and is used to connect two active/functional devices together one on top of the other." The Examiner has failed to indicate where support for such assertion is found in Brown. A close examination of Brown does not reveal anything of the kind. Contrarily, Brown shows holes that are used for mounting of boards; heat tube holes; holes 160, 176, 178. Also, in col. 4, lines 48-53 Brown describes "holes 42 are drilled through both laminates and then plated to receive pins 44 which provide electrical communication to the respective wire traces on the laminates". None of the holes of Brown

are described as extending (illustrative emphasis added) "from the base layer to the active layer and is filled with conductive material" as recited in the claims.

Even when combined, there is nothing in Brown that makes it obvious "to replace the direct metal bonding from the active to the functional layers of Dudoff".

Furthermore, Dudoff and Brown antedate Matsumoto. Accordingly, the Dudoff and Brown references were available to reject Matsumoto, but do not show connections made through an insulating layer and are not the same as these of Matsumoto. Similarly, Dudoff and Brown fail to teach, disclose, or suggest (illustrative emphasis provided) "the at least one aperture extends from the base layer to the active layer and is filled with conductive material" as substantially recited in each of claims 1, 9 and 11.

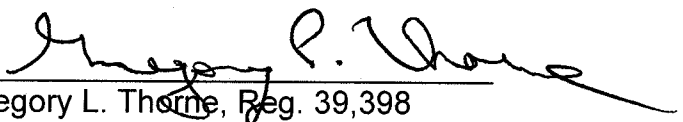
Claims 3-7 respectively depend from claim 1 and accordingly are allowable for at least this reason as well as for the separately patentable elements contained in each of said claims. Accordingly, separate consideration of each of the dependent claims is respectfully requested.

In addition, Appellants deny any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Appellants reserve the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

CONCLUSION

Claims 1, 3,-7, 9 and 11 are patentable over any of Matsumoto alone and in any combination of Dudoff and Brown. Thus the Examiner's rejection of the claims should be reversed.

Respectfully submitted,

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APPENDIX A

CLAIMS ON APPEAL

1. (Previously presented) A flexible monolithic electronic device, comprising:

a substrate layer of electrically insulating material having a first side and an opposed second side, the substrate layer having at least one aperture extending from the first to the second side;

a base layer of semiconductor material disposed on and in contact with the first side of the substrate layer for forming a first electrode;

an active layer of semiconductor material disposed on and in contact with the second side of the substrate layer for forming a second electrode, the active layer including at least one switching element; and

a flexible coating formed on the first side of the substrate layer for acting as a protective cover for the at least one switching element,

wherein the at least one aperture extends from the base layer to the active layer and is filled with conductive material.

2. (Canceled)

3. (Previously presented) The flexible electronic device as claimed in Claim 1, wherein the electronic device comprises a display pixel.

4. (Previously presented) The flexible electronic device as claimed in claim 3, wherein the base layer is electrically conductive and is present between the active layer and the flexible coating, and the first electrode is a pixel electrode.

5. (Previously presented) The flexible electronic device as claimed in claim 4, wherein the display pixel comprises a capacitor having the first and second electrodes and a dielectric, the first electrode is provided in the electrically conductive layer and the second electrode is provided in the active layer, the substrate layer acting as a dielectric.

6. (Previously presented) The flexible electronic device as claimed in claim 5, wherein the substrate layer further comprises a high-K area which acts as the dielectric of the capacitor.

7. (Previously presented) The flexible electronic device as claimed in claim 3, wherein the switching element is part of an array of switching elements provided on the active layer, the array is driven by a driving circuit comprising an integrated circuit of circuit elements provided in and on the active layer.

8. (Canceled)

9. (Previously presented) An apparatus comprising:

a substrate layer of electrically insulating material having a first side and an opposed second side, the substrate layer having at least one aperture extending from the first to the second side;

a base layer of semiconductor material disposed on and in contact with the first side of the substrate layer for forming a first electrode;

an active layer of semiconductor material disposed on and in contact with the second side of the substrate layer for forming a second electrode, the active layer including at least one switching element; and

a flexible coating formed on the first side of the substrate layer for acting as a protective cover for the at least one switching element,

wherein the at least one aperture extends from the base layer to the active layer and is filled with conductive material, and

wherein the substrate layer, base layer, active layer and flexible coating are flexible.

10. (Canceled)

11. (Previously presented) A cartridge comprising:

a display pixel including:

a substrate layer of electrically insulating material having a first side and an opposed second side, the substrate layer having at least one aperture extending from the first to the second side;

a base layer of semiconductor material disposed on and in contact with the first side of the substrate layer for forming a first electrode;

an active layer of semiconductor material disposed on and in contact with the second side of the substrate layer for forming a second electrode, the active layer including at least one switching element; and

a flexible coating formed on the first side of the substrate layer for acting as a protective cover for the at least one switching element,

wherein the at least one aperture extends from the base layer to the active layer and is filled with conductive material,

wherein the substrate layer, base layer, active layer and flexible coating are rolled within the cartridge.

12-13. (Canceled)

APPENDIX B

Evidence on Appeal

None

APPENDIX C

Related Proceedings of Appeal

None